

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Ted E. Dunning, et al. Examiner: Yehdega Retta  
Serial No. 09/846,823 Group Art Unit: 3622  
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Title: RELATIONSHIP DISCOVERY ENGINE  
Customer No.: 76058

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**REPLY BRIEF**

Date: February 9, 2010

**Mail Stop Appeal Brief - Patents**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In response to the Examiner's Answer dated December 10, 2009, pursuant to the Appeal Brief filed in the above-identified application on August 19, 2009, and in accordance with 37 C.F.R. § 41.41, Appellants respectfully submit the following Reply Brief. This Reply Brief is being filed within two months of the date of the Examiner's Answer and is therefore believed to be timely. 37 C.F.R. § 41.41(a)(1).

The following items are set forth as prescribed in MPEP § 1208.

STATUS OF CLAIMS

Claims 1-97 are pending in the application. In the Office Action dated May 27, 2009 (referred to herein as the "Office Action"), Claims 1-97 were rejected. Claims 1-97 remain under final rejection and are the subject of this appeal.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 4-14, 17-27, 32, 33, 39, 42-45, 48-59, 62-72, 75-85, 91 and 92 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosken (U.S. Pat. No. 6,438,579).

2. Claims 2, 3, 28-31, 34-38, 40, 41, 60, 61, 86-90, 93-97 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosken in view of Lazarus (U.S. Patent No. 6,430,539).

3. Claims 15, 16, 46, 47, 73 and 74 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosken in view of Ward (U.S. Patent No. 6,526,411).

In the Examiner's Answer, the Examiner has restated the grounds of rejection by repeating the rejection in the final Office Action dated May 27, 2009. No new ground of rejection has been set forth.

## ARGUMENT

### Introduction

In the Examiner's Answer, the Examiner has confirmed that Appellant's statements in the Appeal Brief under 37 C.F.R. § 41.37(c)(1)(i) through (c)(1)(vi) are correct. The Examiner has also confirmed that the copy of the appealed claims submitted under 37 C.F.R. § 41.37(c)(1)(viii) is correct.

The Examiner's comments in the Response to Arguments section of the Examiner's Answer (pages 7 to 14) have been carefully reviewed. As understood by the Appellant, the Examiner's contentions may be stated briefly as follows:

(1) It is not important or relevant that the '377 Hosken provisional's fails to provide any disclosure that would enable one of ordinary skill to use implicit observations based on users' actions or observed behavior to select a user profile and/or select an item in a user profile has on the patentability of the claims of the present application, since the Appellant is not claiming use of implicit observations based on users' actions or observed behavior to select a user profile and/or select an item in a user profile.

(2) The Appellant has failed to show any limitations that are not disclosed in the '377 Hosken provisional.

(3) Ground of rejection (I) - Group (1): Claims 1, 4-8, 12-14, 17-21, 24-26, 32, 33, 39, 42-45, 48, 49, 51-53, 56-59, 62-66, 70-72, 75-79, 82-84, 91 and 92 (Claims 1, 39 and 59 independent).

a) Hosken discloses user item selections, generating a user log for each user, and scoring a user log responsive to a frequency of occurrence of an item in a user log, frequency of occurrence of an item in all of the user logs and a query weight for item to generate a user log score.

(4) Ground of rejection (1) - Group (2): Claims 9, 50 and 67

a) The portion of Hosken cited in the Examiner's Answer discloses accepting a format schedule specifying music track categories for time periods, and generating a track list conforming to the format schedule, the generated track list containing an identifier for each determined music track result item.

(5) Ground of rejection (1) - Group (3): Claims 22, 23, 54, 55, 80 and 81

a) The portion of Hosken cited in the Examiner's Answer discloses outputting an advertisement relating to the determined at least one result item, and/or outputting an advertisement relating to the determined at least one result item displays at least one selected from the group consisting of: a web page, a banner, a portion of a web page, and an animation.

(6) Ground of rejection (1) - Group (4): Claims 27 and 85

a) The portion of Hosken cited in the Examiner's Answer discloses outputting a notification relating to the determined at least one result item by sending a communication to a user, the communication comprising at least one selected from the group consisting of: transmitting an electronic mail message to the user, telephoning the user, sending a direct mail item to the user.

(7) Ground of rejection (1) - Group (5): Claims 10, 11, 68 and 69

a) The portion of Hosken cited in the Examiner's Answer discloses scoring user logs responsive to a frequency of occurrence of a query item, scoring a user log by determining a frequency of occurrence in each user log of at least one music track identified by the query item identifier, or scoring the user logs by determining a frequency of occurrence in each user log of at least one music track associated with an artist identified by the query item identifier.

(8) Ground of rejection (2) - Group (1): Claims 34, 36, 93 and 95 (Claims 34 and 93 independent)

a) The cited references disclose determining a total number,  $N$ , of item groups, a number,  $N_1$ , of item groups in a subset that contain a second item, a number,  $N_2$ , of item groups not in the subset, a number,  $k_{11}$ , of item groups that contain a first

item, a number,  $k_{12}$ , of item groups not in the subset that contain the first item, a number,  $k_{21}$ , of item groups in the subset that do not contain the first item, a number  $k_{22}$ , of item groups not in the subset that do not contain the first item.

(9) Ground of rejection (2) - Group (2): Claims 28, 86 and 87

a) The cited references disclose determining a total number,  $N$ , of item groups, a number,  $N_1$ , of item groups in a subset that contain a second item, a number,  $N_2$ , of item groups not in the subset, a number,  $k_{11}$ , of item groups that contain a first item, a number,  $k_{12}$ , of item groups not in the subset that contain the first item, a number,  $k_{21}$ , of item groups in the subset that do not contain the first item, a number  $k_{22}$ , of item groups not in the subset that do not contain the first item.

b) The cited references disclose a significance of occurrence of the item in at least a subset of the scored user logs, or that the significance of occurrence of the item is determined by a log likelihood ratio analysis.

(10) Ground of rejection (3) - Group (1): Claims 15, 16, 46, 47, 73 and 74.

a) The cited references disclose a user log, monitoring user behavior with respect to the selected items, and adjusting, in the computer, the user log responsive to the monitored user behavior, or monitoring user behavior comprising at least one selected from the group consisting of: detecting user input requesting that a selected item be repeated; detecting user input requesting that a selected item be skipped; detecting user input specifying a volume change; and detecting user input specifying that a selected item be muted, and adjusting the user log responsive to the monitored user behavior.

The Appellant's responds to each of these contentions appears below.

(1) The '377 Hosken Provisional's Failure To Provide Any Disclosure That Would Enable One Of Ordinary Skill To Use Implicit Observations Based On Users' Actions Or Observed Behavior To Select A User Profile And/Or Select An Item In A User Profile Has On The Patentability Of The Claims Of The Present Application Is Highly Relevant And Important

A. The Importance And Relevance Of The '377 Hosken Provisional's Lack Of Disclosure Is Highly Relevant And Important In View Of The Stated Grounds For Rejection Of The Claims

Since Hosken can only be considered prior art to the claims of the present application if the '377 Hosken provisional application provides the necessary support in compliance with 35 U.S.C. § 112 (see MPEP § 2136.03 (III)), the lack of disclosure in the '377 Hosken provisional is important and relevant.

In the grounds for rejection, the Office Action asserts, at page 4 and reproduced below, that Hosken discloses that explicit user profiles and explicit user item ratings can be omitted and replaced with implicit user profiles and implicit user item ratings. The Office Action further asserts that Hosken can provide recommendations from implicit user profiles. The assertions are not supported by the '377 Hosken provisional. In view of the lack of support for the assertions in the '377 Hosken provisiona, it is submitted that the assertions are also not supported by Hosken, and/or that any disclosure in Hosken in support of the assertions would not be prior art, and could not be used, against the claims of the present application. As is discussed in more detail below, user ratings are essential to providing recommendations in the '377 Hosken provisional. The '377 Hosken provisional lacks any support for how implicit user ratings are derived, e.g., if implicit user ratings are derived from user actions, what user actions are used to derive implicit user ratings, how are the user actions translated into implicit user ratings, etc.

At page 8, lines 18-20, the '377 Hosken provisional states that:

[t]he user may explicitly enter music items and ratings using a form style interface or the system may derive implicit ratings of music items based on the system's observations of the user's actions.

The '377 Hosken provisional fails to describe how the system derives implicit ratings based on the system's observations of the user's actions. Figure 3 of the '377 Hosken provisional shows a step of adding a rating to a user rating vector. However, an implicit user rating must be determined in some manner before it can be added to a user rating vector. The

'377 Hosken provisional does not provide any description as to how an implicit rating is derived so that it can be added to a user rating vector.

Since there is no disclosure in the '377 Hosken provisional for deriving implicit user ratings, the omission of explicit user ratings, as asserted in the Office Action, would render the '377 Hosken provisional unworkable, and would render the '377 Hosken provisional unable to perform the same functions. The omission of explicit user ratings and explicit user profiles is therefore not an obvious expedient, as asserted in the Office Action.

In view of the foregoing, the '377 Hosken provisional fails to provide support for the following assertions made at page 4 of the Office Action (and restated at page 14 of the Examiner's Answer):

Hosken discloses that the user may explicitly enter music items and ratings or the system may derive implicit ratings of music items based on system-based observations (detected) of user actions and the system making recommendation based on the input (see col. 14 lines 13-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement selected features of Hosken. Omitting Hosken's collection of explicit user profile, by interviewing or surveying users, would cost less to operate the system. Also it would have been obvious to one of ordinary skill in the art to provide recommendation from implicit user profile only to those who are not willing to participate in the interview or survey of Hosken. It is also well settled that the elimination of an element or its functions is an obvious expedient if the remaining elements perform the same functions as before.

B. The Importance And Relevance Of The '377 Hosken Provisional's Lack Of Disclosure Is Highly Relevant And Important Since The '377 Hosken Provisional Makes Clear That User Ratings Are Essential To Perform The Functionality Described In The Provisional

In the Examiner's Answer, commencing at the bottom of page 9, the Examiner mentions the two cases, or approaches, used in the '377 Hosken provisional for making recommendations: a content-based approach and a collaborative approach. In both approaches, the '377 Hosken provisional makes item recommendations based on an initial item and user item ratings. This exemplifies that user ratings are essential to providing recommendations in

the '377 Hosken provisional. The Examiner's proposed elimination of the explicit ratings coupled with the lack of support for implicit ratings makes the providing of recommendations using 'the 377 Hosken provisional unworkable, and would render the '377 Hosken provisional unable to perform the same functions. The omission of explicit user ratings and explicit user profiles is therefore not an obvious expedient, as asserted in the Office Action.

The content-based approach is one of the two functions performed in the '377 Hosken provisional. The content-based approach uses user ratings to identify the initial item. The content-based recommendation approach is briefly described at page 5, lines 6-11, which portion is cited in the Examiner's Answer, and is more fully discussed commencing at page 9, line 9 of the provisional. Content recommendation items are identified using contextual links between contextual attributes of the initial item and contextual attributes of the content recommendation items, i.e., the content recommendation items are items that are linked by contextual attributes, such as genre or artist, to the initial item. The content-based approach uses the user's favorites table to identify an item with the highest rating, i.e., the initial item used to identify the content-based recommendation items, and then searches artist, artist association, album and genre tables to retrieve music items that are related to the initial items. The content-based approach uses user ratings to identify the initial item, and the content-based recommendation items are identified based on the contextual relationships between the initial item and other items found using the artist, artist association, album and genre tables. Figure 2c and a portion of Figure 2a, i.e., the first three blocks below "Start" and the right branch, which begins with the box that contains the "Start with First Item in Favourites Table" wording appears to correspond to the content-based approach.

In order to function, the content-based approach must pick an initial item, which item is selected using user ratings.

The collaborative approach to making recommendations is the second of the two functions performed by the '377 Hosken provisional. The '377 Hosken provisional's collaborative approach is briefly described at page 5, lines 12-20, which is cited in the Examiner's Answer, and more fully discussed commencing at page 10, line 7 of the provisional. In the collaborative approach, user ratings are essential and integral in virtually every step of the process. The '377 Hosken provisional uses user ratings to identify a cluster to which the user



belongs, to generate a correlation between user's profiles, to generate an item rating, and to select an item based on item's weight and a correlation weighted rating threshold.

Initially, in the collaborative approach, the '377 Hosken provisional describes that a favorites input table is accessed and used to generate a vector, which is an array-based representation of the favorites input table. With reference to Figure 2a of the '377 Hosken provisional, the box containing the wording "Translate Favourite Table into Vector  $F_u$ " appears to correspond with this step in the description; with the generated vector referred to as  $F_u$ . Figure 2b and a portion of Figure 2a, i.e., the first three blocks below "Start" and the left branch, which begins with the box that contains the "Translate Favourite Table into Vector  $F_u$ " wording, appear to correspond to the collaborative approach. A correlation is determined between the user and a cluster to identify the cluster for the user. At page 10, lines 16-18, the '377 Hosken provisional indicates that a correlation algorithm is used and that it details the correlation algorithm; however, the operational details of the correlation algorithm are not described in the '377 Hosken provisional.

Once a target cluster, referred to as  $C_i$  in Figure 2a, is determined for the user, the '377 Hosken provisional continues, at page 11, line 10, to find other users, referred to herein as cluster users, that are linked to the target cluster. A correlation between the user's user profile and each of the cluster user's user profile is calculated. Again, there is no description of the operations performed in the correlation algorithm. Fig. 2b indicates, however, that the correlation between the user's user profile and a cluster user's user profile uses a user vector,  $UV_i$ , for the target cluster,  $C_i$ , user and the user's vector,  $F_u$ . As discussed above, it is understood from the '377 Hosken provisional that the user's vector,  $F_u$ , contains user ratings. At page 5, lines 15-15, the Hosken '377 provisional describes that user profiles are represented as vectors, and that the system generates a vector correlation between users. It is therefore understood that the '377 Hosken provisional must use the user ratings in the user profiles, represented as vectors  $UV_i$  and  $F_u$ , to generate the correlation between the user's user profile and a cluster user's user profile.

After the correlation is determined, the '377 Hosken provisional describes, at page 11, lines 15-19, that the determined correlation between the user's user profile and the cluster user's user profile is compared to a correlation threshold. If the determined correlation meets the correlation threshold, the user's profile is compared to the cluster user's user profile to identify any items that are in the cluster user's user profile that are not in the user's profile. A correlated

rating weight is determined for an item, K, by multiplying the determined correlation with the rating of the item, K, in the cluster user's user vector. At page 11, lines 20-23, the '377 Hosken provisional describes that if the correlated rating weight is above a correlation weighted rating threshold, item is added to the collaborative result table.

Like the first function, the second function, the collaborative approach to making recommendations, performed by the '377 Hosken provisional uses user ratings.

**C. The '377 Hosken Provisional Fails To Provide Any Disclosure For Determining Implicit User Ratings And/Or The Information In A User Profile Being Provided Through Implicit Observation By The System Based On Users' Actions**

The '377 Hosken provisional describes that an explicit user rating is input by the user; The '377 Hosken provisional fails to describe how an implicit user rating is determined, or how information in a user profile is provided through implicit observation by the system based on users' actions. The '377 Hosken provisional is silent as to what amounts to an implicit rating action, how an implicit rating value is determined, and/or how implicit observation by the system based on user's actions could be used (or even if it is used at all) to derive an implicit rating. The '377 Hosken provisional fails to provide enabling support for how information in the user profile table can be provided through "implicit observation by the system based on users' actions," and/or how such information is used in the content-based and collaborative approaches of the '377 Hosken provisional.

**D. The '377 Hosken Provisional Cannot Provide The Necessary § 112, First Paragraph Support For Hosken**

The '377 Hosken provisional does not provide support for the portions of Hosken relied upon in the Examiner's Answer. At pages 11 and 12, the Examiner's Answer relies on Figures 2 and 3, Tables II and III, col. 9, line 65 to col. 10, line 59 Hosken. The cited portions of Hosken are not part of the '377 Hosken provisional. Additionally and with respect to Table I of Hosken, which indicates that implicit rating value is derived based on the system's observations of user's actions, the '377 Hosken provisional fails to provide the necessary support.

The above-identified portions exemplify the total absence of the § 112, first paragraph support needed before Hosken can be applied as a reference against the claims of the present application.

E. The Stated Premise In The Grounds For Rejection Is Not Supported By Description Provided In The '377 Hosken Provisional, And Therefore Is Not Supported By Hosken

The grounds for rejection are premised on the assertion that the '377 Hosken provisional can somehow operate with the omission of explicit ratings. As discussed above, the '377 Hosken provisional fails to provide any support for the assertions made in the grounds of rejection, as no such embodiments are described, nor is there a teaching as to how a system without explicit ratings would or could operate. Additionally, the omission of explicit user ratings, as asserted in the Office Action, would render the '377 Hosken provisional unworkable, and would render the '377 Hosken provisional unable to perform the same functions. The omission of explicit user ratings and explicit user profiles is therefore not an obvious expedient, as asserted in the Office Action. Since the '377 fails to provide the necessary support for the assertions made in the Office Action, Hosken must necessarily fail to support the assertions and the grounds of rejection. It is respectfully submitted that the grounds of rejection are therefore deficient, and should be withdrawn.

(2) The Examiner Asserts That The Appellant Has Failed To Show Any Limitations That Are Not Disclosed In The '377 Hosken Provisional

The Appellant addresses this assertion herein and in the Appellant's previous remarks of record, including the Appellant's Appeal Brief.

(3) With Regard To Claims 1, 4-8, 12-14, 17-21, 24-26, 32, 33, 39, 42-45, 48, 49, 51-53, 56-59, 62-66, 70-72, 75-79, 82-84, 91 and 92 (Claims 1, 39 And 59 Independent), Hosken And The '377 Hosken Provisional Fail To Disclose Or Suggest Accepting User Item Selections, Generating A User Log For Each User, Scoring Each User Log And/Or Determining At Least One Result Item

A. The "Item Selection" Referred To In The Examiner's Answer Does Not Correspond To The Claimed Item Selections

With reference to Claim 1, for example, item selections detected from a plurality of users are accepted, and a log for each user is generated that contains the identifiers corresponding to the detected user item selections. Commencing at the bottom of page 12, the Examiner's Answer equates the selection of an item described at page 5, lines 6-20 of the '377 Hosken provisional with the claimed item selections. As is described at page 5, lines 6-20 of the '377 Hosken provisional, the item that is selected is used by the content-based and collaborative

approaches to identify recommendation items. The content-based approach uses the selected item's contextual attributes to identify other items that have contextual attribute linkage with the selected items contextual attributes. The collaborative approach uses the selected item to identify other users that have rated the selected item. In contrast to using an initial item selection as a "seed" to identify other items, the claimed item selections detected from a plurality of users are accepted and a user log is generated for each user, the user log contains an identifier corresponding to the detected user item selection. This claim element is completely missing from the '377 Hosken provisional.

B. The Portion Of Hosken Cited In The Examiner's Answer Fails To Disclose Or Suggest A Frequency Of Occurrence Of An Item In A User Profile And/Or A Frequency Of Occurrence Of An Item In All Of The User Logs And A Query Weight For Item To Generate A User Log Score

At page 13 of the Examiner's Response, the Examiner refers to col. 7, lines 1-30 of Hosken, which appears to concern the collaborative approach of the '377 Hosken provisional. As such and as discussed above, the collaborative approach of the '377 Hosken provisional identifies a cluster to which the user belongs, correlates the user's profile with the user profile of each user belonging to the cluster using the user item ratings from the user profile, selects those cluster users that have a correlation that meets a correlation threshold indicating similar tastes, identifies items in the user profiles of the selected cluster user(s), calculates a correlated rating weight for the identified items by multiplying the correlation with the item's rating, and selects those items that have a correlated rating weight that is above a correlation weighted rating threshold to the collaborative recommendation results.

As best understood, it is suggested in the Examiner's Answer, at page 13, that user profile selection is based on user profiles having at least one item in common, and that discloses the claimed frequency of occurrence. There is no support in the '377 Hosken provisional that a user profile is selected responsive to the frequency of occurrence of an item in a user profile, the frequency of occurrence of the item in all of the user profiles and query weight for the item. As described in the '377 Hosken provisional, a cluster user's user profile is selected using a measure of the correlation between the user's user profile and the cluster user's user profile that is based on the user item ratings. The Hosken correlation is not based on the number of times that an item occurs in a user profile but rather on the user rating of an item that is identified in the user

profile. Additionally, there is no disclosure or suggestion in the '377 Hosken provisional of using an item's frequency of occurrence, or the number of times that an item occurs, in a user profile and/or in all of the user profiles to score a user profile. As is described in the disclosure of the present application, a frequency of occurrence of an item identifies the number of occurrences, even multiple occurrences, of the item in a user log; and a frequency of occurrence of an item in all of the user logs identifies the number of occurrences of the item in all of the user logs. The claimed user log score is a score for a user log that is responsive to a frequency of occurrence of in the user log of the at least one item identified in a query, a frequency of occurrence of the at least one query item in all of the user logs, and a query weight for the at least one query item.

In the Examiner's Answer, at page 13, portions of Hosken, i.e., col. 8, line 56 – col. 9 line 2 and col. 9, lines 22-38, are cited by the Examiner as support for a position that Hosken teaches the claimed query weight for the at least one query item identifier. The cited portions of Hosken find little if any support in the '377 Hosken provisional. The '377 Hosken provisional is devoid of any mention of Hosken's industry database 52, expert weighting filter 54 and final weighting filter 56, all of which are shown in Hosken's Figure 2. As discussed herein, Figure 2 of Hosken is not part of the '377 Hosken provisional. The '377 Hosken provisional is devoid of any mention of Hosken's final weighting filter 56 used to combine the product of Hosken's expert weighting filter 54 with Hosken's collected group behaviors 60 and Hosken's "other behaviors" collected from other sources. While the '377 Hosken provisional mentions contextual attributes, such as genre and artist, and a strength or weight of a relationship between items that are contextually linked, the '377 Hosken provisional is devoid of any teach or disclosure of representing Hosken's group and others behaviors in Hosken's final weighting filter 56 as a map constructed of binary relationships between characterizing attributes of media content items qualified by weighting values. Additionally, as described in the '377 Hosken provisional, the weight is the weight or strength of two items that are contextually related; it is not used to generate a correlation between two user profiles, as seems to be suggested in the Examiner's Answer. Additionally and while the Examiner's answer appears to equate correlation with the claimed user log score, neither the cited portion of Hosken nor the '377 Hosken provisional discloses or suggests that the item relationship weighting is used in user profile correlation; the

item relationship weighting of Hosken cannot therefore be equated to the claimed query weight, which is used in scoring a user log, as claimed.

C. The '377 Hosken Provisional' And Hosken Fail To Disclose Multiple Claim Elements

In view of the arguments presented herein and the Appellant's remarks already of record, including the Appellant's Appeal Brief, the Appellant respectfully submits that the '377 Hosken provisional and Hosken fail to disclose or suggest at least the claim elements of accepting item selections detected from a plurality of user, generating a log for each user, each log containing identifiers corresponding to detected user item selections, scoring each of the user logs, the scoring for each user log being responsive to a frequency of occurrence of at least one query item identifier in the user log, a frequency of occurrence of the at least one query item identifier in all of the user logs and a query weight for the at least one query item identifier in the query, so as to generate a user log score for each user log based exclusively on detected user item selections and the at least one query item, and determining at least one result item, responsive to the scoring of each user log, so as to discover at least one relationship based exclusively on detected user item selections and the at least one query item.

(4) With Regard To Claims 9, 50 and 67, Hosken And The '377 Hosken Provisional Fail To Disclose Or Suggest Accepting A Format Schedule Specifying Music Track Categories For Time Periods, And Generating A Track List Conforming To The Format Schedule, The Generated Track List Containing An Identifier For Each Determined Music Track Result Item

A. The Portion Of Hosken Cited In The Examiner's Answer Is Not Part Of The '377 Hosken Provisional

Although no citation is provided, the Examiner's Answer, at page 14, appears to be citing col. 12, line 13-37, which refers to Figure 2 of Hosken, as support a position that Hosken discloses accepting a format schedule specifying music track categories for time periods, and generating a track list conforming to the format schedule, the generated track list containing an identifier for each determined music track result item. The Examiner's Answer does not identify the portion of the '377 Hosken provisional that provides § 112, first paragraph support for the cited portions of Hosken. As discussed herein, Figure 2 of Hosken is not part of the '377 Hosken provisional. The cited portion of Hosken includes Table IV, which describes different bases or

starting points for the media content items 52 known to the system 50 to be refined into a recommendation set 72. Items 2-4 of Table IV of Hosken are not part of the '377 Hosken provisional.

B. In Addition To Lacking Support In The '377 Hosken Provisional, The Cited Portion Of Hosken Fails To Disclose Or Suggest Accepting A Format Schedule Specifying Music Track Categories For Time Periods, And Generating A Track List Conforming To The Format Schedule, The Generated Track List Containing An Identifier For Each Determined Music Track Result Item

As best understood, it is asserted in the Examiner's Answer that a re-release of a collection has an associated time period, and that this discloses the claim limitations of accepting a format schedule specifying music track categories for time periods, and/or generating a track list conforming to the format schedule, the generated track list containing an identifier for each determined music track result item, as required by Claims 9, 50 and 67.

The '377 Hosken provisional is devoid of any description of a specific time period, and is devoid of any time period associated with its content-based and collaborative approaches. Additionally, the '377 Hosken provisional is devoid of any mention of a format schedule specifying music track categories for time periods, and/or generating a track list conforming to the format schedule, the generated track list containing an identifier for each determined music track result item.

In addition to having no § 112, first paragraph support in the '377 Hosken provision, it is not apparent how the mention of recent re-released collections in item 2 of Hosken's Table IV discloses or even suggests a format schedule specifying music track categories for time periods, and/or generating a track list conforming to the format schedule, the generated track list containing an identifier for each determined music track result item. It is respectfully submitted that all of the items in Hosken's Table IV suffer from the same deficiencies.

It is respectfully submitted that the Office Action and the Examiner's Answer fail to identify any portion of Hosken or the '377 Hosken provisional, and none can be found, that discloses accepting a format schedule specifying music track categories for time periods, and generating a track list conforming to the format schedule, the generated track list containing an identifier for each determined music track result item. The '377 Hosken provisional and Hosken

fail to disclose or suggest accepting a format schedule specifying music track categories for time periods, and generating a track list conforming to the format schedule, the generated track list containing an identifier for each determined music track result item, as required in Claims 9, 50 and 67.

(5) With Regard To Claims 22, 23, 54, 55, 80 and 81, Hosken And The '377 Hosken Provisional Fail To Disclose Or Suggest Outputting An Advertisement Relating To The Determined At Least One Result Item, And/Or Outputting An Advertisement Relating To The Determined At Least One Result Item Displays At Least One Selected From The Group Consisting Of: A Web Page, A Banner, A Portion Of A Web Page, And An Animation

A. The Portion Of Hosken Cited In The Examiner's Answer Is Not Part Of The '377 Hosken Provisional

At page 14, the Examiner's Answer cites col. 4, lines 11-43, col. 13, lines 34-50 and col. 16, lines 44-43. The Examiner's Answer does not identify the portion of the '377 Hosken provisional that provides § 112, first paragraph support for the cited portions of Hosken. Figure 1A of Hosken, which is described at col. 4, lines 29-43 is not a part of the '377 Hosken provisional. Hosken's description at col. 4, lines 11-28 is not a part of the '377 Hosken provisional.

B. In Addition To Lacking Support In The '377 Hosken Provisional, The Cited Portion Of Hosken Fails To Disclose Or Suggest Outputting An Advertisement Relating To The Determined At Least One Result Item, And/Or Outputting An Advertisement Relating To The Determined At Least One Result Item Displays At Least One Selected From The Group Consisting Of: A Web Page, A Banner, A Portion Of A Web Page, And An Animation, As Required By Claims 22, 23, 54, 55, 80 and 81.

At col. 13, lines 34-50, Hosken mentions that a user can explore the recommendations and related items before selecting an item to purchase or consume. At col. 16, lines 44-43, Hosken mentions that its recommendations system recommend items other than musical compact discs, i.e., videos, music, television shows, books and other consumer entertainment media content. In contrast to a user selecting an item to purchase or consume, the claimed subject matter recites outputting an advertisement relating to the determined at least one result item, and that outputting an advertisement related to the determined at least one result item displays at least



one selected from the group consisting of a web page, a banner, a portion of a web page, an animation, none of which are mentioned in the '377 Hosken provisional.

At page 15 of the Examiner's Answer, it is asserted that since a user can purchase a recommended item, the item is its own advertisement. Even assuming this to be true, only for the sake of discussion and without concession of any kind, the claim language recites outputting an advertisement relating to the determined at least one result item, which is not the same as the item. In further contrast, the claim language recites outputting an advertisement relating to the determined at least one result item displays at least one selected form the group consisting of: a web page, a banner, a portion of a web page, and an animation.

It is respectfully submitted that the Office Action and the Examiner's Answer fail to identify any portion of Hosken or the '377 Hosken provisional, and none can be found, that disclose or suggest outputting an advertisement relating to the determined at least one result item (Claims 22, 54 and 80), and/or outputting an advertisement relating to the determined at least one result item displays at least one selected form the group consisting of: a web page, a banner, a portion of a web page, and an animation (Claims 23, 55 and 81). The '377 Hosken provisional and Hosken fail to disclose or suggest outputting an advertisement relating to the determined at least one result item (Claims 22, 54 and 80), and/or outputting an advertisement relating to the determined at least one result item displays at least one selected from the group consisting of: a web page, a banner, a portion of a web page, and an animation (Claims 23, 55 and 81), as required by the claims.

(6) With Regard To Claims 27 and 85, Hosken And The '377 Hosken Provisional Fail To Disclose Or Suggest Outputting A Notification Relating To The Determined At Least One Result Item By Sending A Communication To A User, The Communication Comprising At Least One Selected From The Group Consisting Of: Transmitting An Electronic Mail Message To The User, Telephoning The User, Sending A Direct Mail Item To The User

At page 15, the Examiner's Answer states "Hosken teaches the output of media content items [is] presented on a user accessible display and other communications connection informational screens." No citation to a portion of Hosken, or the '377 Hosken provisional, is provided in the Examiner's Answer.

It is respectfully submitted that the Office Action and the Examiner's Answer fail to identify any portion of Hosken or the '377 Hosken provisional, and none can be found, that

disclose or suggest outputting a notification relating to the determined at least one result item by sending a communication to a user, the communication comprising at least one selected from the group consisting of: transmitting an electronic mail message to the user, telephoning the user, sending a direct mail item to the user, as required by Claims 27 and 85. The '377 Hosken provisional and Hosken fail to disclose or suggest outputting a notification relating to the determined at least one result item by sending a communication to a user, the communication comprising at least one selected from the group consisting of: transmitting an electronic mail message to the user, telephoning the user, sending a direct mail item to the user, as required by Claims 27 and 85.

(7) With Regard To Claims 10, 11, 68 and 69, Hosken And The '377 Hosken Provisional Fail To Disclose Or Suggest Disclose Or Suggest Scoring User Logs Responsive To A Frequency Of Occurrence Of A Query Item, Scoring A User Log By Determining A Frequency Of Occurrence In Each User Log Of At Least One Music Track Identified By The Query Item Identifier, Or Scoring The User Logs By Determining A Frequency Of Occurrence In Each User Log Of At Least One Music Track Associated With An Artist Identified By The Query Item Identifier

The Appellant has addressed the failure of the '377 Hosken provisional and Hosken to disclose or suggest scoring user logs responsive to frequency of occurrence. The following remarks address the assertions made in the Examiner's Answer with regard to Claims 10, 11, 68 and 69.

At pages 15 and 16, the Examiner's Answer cites col. 7, lines 1-30 and col. 16, lines 44-43. As discussed hereinabove, col. 7, lines 1-30 of Hosken, appears to concern the collaborative approach of the '377 Hosken provisional. As such and as discussed above, the collaborative approach of the '377 Hosken provisional identifies a cluster to which the user belongs, correlates the user's profile with the user profile of each user belonging to the cluster using the user item ratings from the user profile, selects those cluster users that have a correlation that meets a correlation threshold indicating similar tastes, identifies items in the user profiles of the selected cluster user(s), calculates a correlated rating weight for the identified items by multiplying the correlation with the item's rating, and selects those items that have a correlated rating weight that is above a correlation weighted rating threshold to the collaborative recommendation results.

The '377 Hosken provisional uses a measure of the correlation between the user's user profile and the cluster user's user profile. The correlation is not based on the number of times

that an item occurs in a user profile but rather on the user rating of an item that is identified in the user profile. As is described in the disclosure of the present application, a frequency of occurrence of an item identifies the number of occurrences, even multiple occurrences. There is no disclosure or suggestion in the '377 Hosken provisional of scoring of user logs, let alone scoring of user logs being responsive to a frequency of occurrence of a query item, scoring a user log by determining a frequency of occurrence in each user log of at least one music track identified by the query item identifier, or scoring the user logs by determining a frequency of occurrence in each user log of at least one music track associated with an artist identified by the query item identifier, as required by the claims.

Col. 16, lines 44-43 of Hosken, which discusses using the list of results being a basis for subsequent decisions as to which items to sample, purchase or consume, is also not understood to provide a disclosure or suggestion of the claim limitations of scoring user logs responsive to a frequency of occurrence of a query item, scoring a user log by determining a frequency of occurrence in each user log of at least one music track identified by the query item identifier, or scoring the user logs by determining a frequency of occurrence in each user log of at least one music track associated with an artist identified by the query item identifier.

It is respectfully submitted that the Office Action and the Examiner's Answer fail to identify any portion of Hosken or the '377 Hosken provisional, and none can be found, that discloses or suggests scoring the user logs, and/or scoring user logs responsive to a frequency of occurrence of a query item. It follows then that Hosken fails to disclose or suggest scoring a user log by determining a frequency of occurrence in each user log of at least one music track identified by the query item identifier, as required by Claims 10 and 68, or scoring the user logs by determining a frequency of occurrence in each user log of at least one music track associated with an artist identified by the query item identifier, as required by Claims 11 and 69. The '377 Hosken provisional and Hosken fail to disclose or suggest scoring user logs responsive to a frequency of occurrence of a query item, and further fails to disclose or suggest scoring a user log by determining a frequency of occurrence in each user log of at least one music track identified by the query item identifier, as required by Claims 10 and 68, or scoring the user logs by determining a frequency of occurrence in each user log of at least one music track associated with an artist identified by the query item identifier, as required by Claims 11 and 69.

(8) With Regard To Claims 34, 36, 93 and 95, The Cited References Fail To Disclose Or Suggest Determining A Total Number,  $N$ , Of Item Groups, A Number,  $N_1$ , Of Item Groups In A Subset That Contain A Second Item, A Number,  $N_2$ , Of Item Groups Not In The Subset, A Number,  $k_{11}$ , Of Item Groups That Contain A First Item, A Number,  $k_{12}$ , Of Item Groups Not In The Subset That Contain The First Item, A Number,  $k_{21}$ , Of Item Groups In The Subset That Do Not Contain The First Item, A Number  $k_{22}$ , Of Item Groups Not In The Subset That Do Not Contain The First Item

Claims 34, 36, 93 and 95 recite a total number,  $N$ , item groups, a number,  $N_1$ , of item groups in a subset that contain a second item, the subset of item groups being defined as including those groups that contain a second item, a number,  $N_2$ , of item groups not in the subset of item groups, a number,  $k_{11}$ , of item groups that contain a first item, a number,  $k_{12}$ , of item groups not in the subset that contain the first item, a number,  $k_{21}$ , of item groups in the subset that do not contain the first item, a number  $k_{22}$ , of item groups not in the subset that do not contain the first item, as required by the claims. A log likelihood ratio is determined, and a representation of the relationship between the first item and the second item is generated based on the log likelihood ratio.

The subset of item groups mentioned in the second determining step is defined by the claim language as including those item groups that contain a second item. The phrase "those item groups" refer to the  $N$  item groups recited in the first determining step.

The portion of Hosken cited in the Office Action is understood to describe a collaborative recommendation system, which correlates user profiles, and adds items from a correlated user profile to a result table. The collaborative recommendation system generates a correlation value that correlates two user profiles, and modifies an item rating using the correlation value. The cited portion of Hosken does not disclose or suggest at least the elements of determining a total number,  $N$ , of item groups, a number,  $N_1$ , of item groups in a subset that contain a second item, a number,  $N_2$ , of item groups not in the subset, a number,  $k_{11}$ , of item groups that contain a first item, a number,  $k_{12}$ , of item groups not in the subset that contain the first item, a number,  $k_{21}$ , of item groups in the subset that do not contain the first item, a number  $k_{22}$ , of item groups not in the subset that do not contain the first item, as required by the claims.

The other reference relied upon by the Examiner, namely Lazarus, fails to disclose or suggest at least the elements of determining a total number,  $N$ , of item groups, a number,  $N_1$ , of item groups in a subset that contain a second item, a number,  $N_2$ , of item groups not in the

subset, a number,  $k_{11}$ , of item groups that contain a first item, a number,  $k_{12}$ , of item groups not in the subset that contain the first item, a number,  $k_{21}$ , of item groups in the subset that do not contain the first item, a number  $k_{22}$ , of item groups not in the subset that do not contain the first item, as required by the claims.

Since the Office Action, at page 6, concedes that Hosken fails to disclose or suggest determining a log likelihood ratio, it follows that Hosken also fails to disclose or suggest generating a representation of the relationship between the claimed first and second items based on the determined log likelihood ratio. Lazarus also fails to disclose or suggest a log likelihood ratio, see Section 9.B., below.

Neither Hosken nor Lazarus disclose or suggest determining a number of item groups as recited in the claimed determining steps. The supposition made in the Examiner's Answer, (without support), at pages 16-17, that the number of item groups determined in a claimed determining step could be zero does not cure the deficiencies noted with respect to Hosken and Lazarus, nor is it explained how this zero number yields the claimed element.

Thus, no combination of Hosken and Lazarus renders the claims obvious, since Lazarus does not and cannot supply the elements missing from Hosken, which include determining a total number,  $N$ , of item groups, a number,  $N_1$ , of item groups in a subset that contain a second item, a number,  $N_2$ , of item groups not in the subset, a number,  $k_{11}$ , of item groups that contain a first item, a number,  $k_{12}$ , of item groups not in the subset that contain the first item, a number,  $k_{21}$ , of item groups in the subset that do not contain the first item, a number  $k_{22}$ , of item groups not in the subset that do not contain the first item, as required by the claims.

Claim 36 depends directly from Claim 34, and Claim 95 depends directly from Claim 93. Claims 36 and 95 therefore include the limitations noted above.

(9) The Cited References Fail To Disclose Or Suggest The Limitations Of Claims 28, 86 And 87

A. The Cited References Fail To Disclose Or Suggest Determining A Total Number,  $N$ , Of Item Groups, A Number,  $N_1$ , Of Item Groups In A Subset That Contain A Second Item, A Number,  $N_2$ , Of Item Groups Not In The Subset, A Number,  $k_{11}$ , Of Item Groups That Contain A First Item, A Number,  $k_{12}$ , Of Item Groups Not In The Subset That Contain The First Item, A Number,  $k_{21}$ , Of Item Groups In The Subset That Do Not Contain The First Item, A Number  $k_{22}$ , Of Item Groups Not In The Subset

## That Do Not Contain The First Item, As Recited In Claim 28 And

87

As discussed above, no combination of Hosken and Lazarus renders the claims obvious, since Lazarus does not and cannot supply the elements missing from Hosken, which include determining a total number,  $N$ , of item groups, a number,  $N_1$ , of item groups in a subset that contain a second item, a number,  $N_2$ , of item groups not in the subset, a number,  $k_{11}$ , of item groups that contain a first item, a number,  $k_{12}$ , of item groups not in the subset that contain the first item, a number,  $k_{21}$ , of item groups in the subset that do not contain the first item, a number  $k_{22}$ , of item groups not in the subset that do not contain the first item, as required by the claims.

B. The Cited References Fail To Disclose Or Suggest A Significance Of Occurrence Of The Item In At Least A Subset Of The Scored User Logs, Or That The Significance Of Occurrence Of The Item Is Determined By A Log Likelihood Ratio Analysis, As Recited In Claim 86

At P64.19 – P65.12 and P60.8 – P61.9 of the present application, an occurrence of an item, e.g., a track, album or artist, is measured using a log likelihood ratio measurement. The log likelihood ratio is determined based on the number of occurrences,  $\pi_{ij}$ , of the item,  $j$ , in a user log,  $i$ , and the number of occurrences,  $\mu_j$ , of the item,  $j$ , in all of the user logs (see P61.2 and P62.4 – P62.5).

The Examiner's Answer, at page 18, asserts that Lazarus teaches determining a relationship between the occurrence of two items, either the occurrence of individual items or the co-occurrence of two items, and therefore Lazarus teaches the claimed significance of occurrence of the item in at least a subset of the scored user logs, and the claimed significance of occurrence of the item determined by a log likelihood ratio analysis.

Lazarus predicts future sales by consumers in a merchant segment using a predictive model. Lazarus analyzes co-occurrences of two merchants,  $i$  and  $j$ , in a window time frame of merchant transactions made by a consumer, to identify that the two merchants both occur in the transaction window, i.e., that the consumer made a purchase from each of the two merchants during the time frame set by the window. Lazarus creates a vector for a merchant,  $i$ , which identifies the number of co-occurrences with merchant,  $j$ ; a merchant's vector also identifies the total number of co-occurrences for the merchant. Lazarus determines the significance of the

co-occurrences of two merchants,  $i$  and  $j$ , by determining whether the actual number of co-occurring transactions,  $T_{ij}$ , of the two merchants,  $i$  and  $j$ , and an expected number of co-occurring transactions,  $\hat{T}_{ij}$ , is much larger than a variance,  $\sigma_{ij}$ . Lazarus uses a log likelihood ratio,  $\ln \lambda$ , to determine the strength of the relationship between the two merchants,  $r_{ij}$ , which is used to determine a desired dot product,  $d_{ij}$ , for the two merchants (col. 23, line 52 to col. 25, line 54).

Lazarus' co-occurrence is the co-occurrence of two merchants in a given time frame window. In contrast to Lazarus' co-occurrence of two merchants that both occur in the same time frame window, the claimed occurrence is the occurrence of a user item selection in a subset of scored user logs. Lazarus determines the significance of merchants  $i$  and  $j$  both occurring in the same time window. In contrast, the claimed significance is a significance of an item occurring in a subset of scored user logs. Lazarus uses a log likelihood ratio to determine the strength of a relationship between the two merchants,  $i$  and  $j$ , that both occur in the same time window. In contrast, the claimed log likelihood ratio is used to identify an item that occurs in the scored user logs.

Lazarus fails to disclose or suggest the claimed significance of occurrence of the item in at least a subset of the scored user logs, and fails to disclose or suggest the claimed log likelihood ratio that is used to identify an item that occurs in the scored user logs.

Accordingly, a combination of Hosken and Lazarus does not render the claims obvious, since Lazarus does not and cannot supply the elements missing from Hosken of a significance of occurrence of the item in at least a subset of the scored user logs, or that the significance of occurrence of the item is determined by a log likelihood ratio analysis, as required by the claims.

(10) With Regard To Claims 15, 16, 46, 47, 73 and 74, The Cited References Fail To Disclose Or Suggest A User Log, Monitoring User Behavior With Respect To The Selected Items, And Adjusting, In The Computer, The User Log Responsive To The Monitored User Behavior, Or Monitoring User Behavior Comprising At Least One Selected From The Group Consisting Of: Detecting User Input Requesting That A Selected Item Be Repeated; Detecting User Input Requesting That A Selected Item Be Skipped; Detecting User Input Specifying A Volume Change; And Detecting User Input Specifying That A Selected Item Be Muted, And Adjusting The User Log Responsive To The Monitored User Behavior

As is discussed herein and in the remarks of record, including the Appellant's Appeal Brief, Hosken fails to disclose or suggest a user log. The Office Action, at page 7, concedes that Hosken fails to disclose or suggest monitoring user behavior by detected user input. It follows then that Hosken cannot and does not disclose or suggest monitoring user behavior comprising at least one selected from the group consisting of: detecting user input requesting that a selected item be repeated; detecting user input requesting that a selected item be skipped; detecting user input specifying a volume change; and detecting user input specifying that a selected item be muted, and adjusting the user log responsive to the monitored user behavior. It also follows that Hosken cannot and does not disclose or suggest adjusting a user play log responsive to monitored user behavior. The Office Action cites col. 8, lines 20-40 of Ward, as teaching selecting tracks based on a user profile that includes a user's dislikes for a particular item determined by the user skipping the item or the user rating the item.

Ward cannot remedy the deficiencies noted with respect to Hosken. While the Examiner's Answer asserts, at page 18, that Ward disclose a user log, the Examiner's Answer does not identify what in Ward corresponds to the claimed user log. Additionally, at pages 18-19, the Examiner's Answer cites col. 2, lines 4-26, but fails to identify which Ward provisional, and what portion of the Ward provisional, provides the necessary § 112, first paragraph support for the cited portion of Ward.

Ward merely indicates that Ward records the fact that a user can express a dislike for a content item by skipping the item or rating the item, and that Ward keeps track of the items for which the user has expressed a dislike. Like Hosken, Ward fails to disclose or suggest a user log, monitoring user behavior with respect to the selected items, and adjusting, in the computer, the user log responsive to the monitored user behavior, or monitoring user behavior comprising at least one selected from the group consisting of: detecting user input requesting that a selected



item be repeated; detecting user input requesting that a selected item be skipped; detecting user input specifying a volume change; and detecting user input specifying that a selected item be muted, and adjusting the user log responsive to the monitored user behavior.

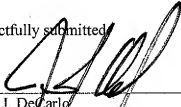
Accordingly, a combination of Hosken and Lazarus does not render the claims obvious, since Lazarus does not and cannot supply the elements missing from Hosken of a user log, monitoring user behavior with respect to the selected items, and adjusting, in the computer, the user log responsive to the monitored user behavior, or monitoring user behavior comprising at least one selected from the group consisting of: detecting user input requesting that a selected item be repeated; detecting user input requesting that a selected item be skipped; detecting user input specifying a volume change; and detecting user input specifying that a selected item be muted, and adjusting the user log responsive to the monitored user behavior.

### Conclusion

It is respectfully submitted that a prima facie case of obviousness has not been established for any of the rejected claims, for the reasons set forth herein and in the Appellant's remarks of record, including the Appeal Brief. All of Claims 1-97 are therefore believed to be in condition for allowance.

The Appellant's undersigned attorney may be reached by telephone at 212-801-6729. All correspondence should continue to be directed to the address listed below, which is the address associated with Customer Number 76058.

Respectfully submitted,



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